

the RARS

Excite

Raleigh Amateur Radio Society



the Friendship

September, 2000
Number 359

20 NEW HAMS!

RARS Summer Class Graduates

Next RARS Meeting:
Tuesday, Sept. 5th
- PCRN and SERA -

Wake County ARES Back In Business
Step by Step Guide to the ULS
KN4AQ's Fox Hunt Adventure



President Tim:
KF4RTX Elected

The Exciter

The **Exciter** is the monthly newsletter of the Raleigh Amateur Radio Society. It is available in both printed and electronic form. The printed version is mailed to members just before each club meeting. The electronic form, in Adobe Acrobat PDF format, is e-mailed about a week earlier.

We solicit both articles and advertising. The deadline for submissions is the 15th of the prior month. Contact the Editor.

The views contained in the Exciter are those of the individual authors, and are not necessarily the views of the Editor, or the Raleigh Amateur Radio Society.

The Raleigh Amateur Radio Society

The Raleigh Amateur Radio Society, Inc. (RARS) was founded in 1969 and continues to serve and support the Amateur Radio community in the greater Triangle area. In 1999, we incorporated a new RARS, and obtained 501(c)(3) Non-Profit tax status.

The objectives of the club are to promote worldwide friendship through Amateur Radio; to be of public service by providing radio communications in times of disaster, emergency, or civic need; to educate members in radio technique; and to provide training classes to assist in obtaining Amateur Radio licenses.

Anyone interested in Amateur Radio is eligible to apply for membership. Dues for regular licensed amateurs are \$18.00 per year (from July 1 through June 30). Additional immediate family members pay \$5.00 each per year. Dues for licensed amateurs older than 59 or younger than 16 are \$12.00 per year. Dues for non-licensed Associate members are \$9.00 per year.

Applications for membership may be obtained from the treasurer, or the RARS web site (www.rars.org).

Officers

President	Tim Nicholson KF4RTX 501-7746 kf4rtx@arrl.net
Vice-President	open
Secretary	Jeff Wittich AC4ZO 362-9456 ac4zo@arrl.net
Treasurer	David Fix N4YTO 677-8320 dfix@pagesz.net
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Info

Repeaters:

145.13
146.64
224.64
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Web Site:

<http://www.rars.org>

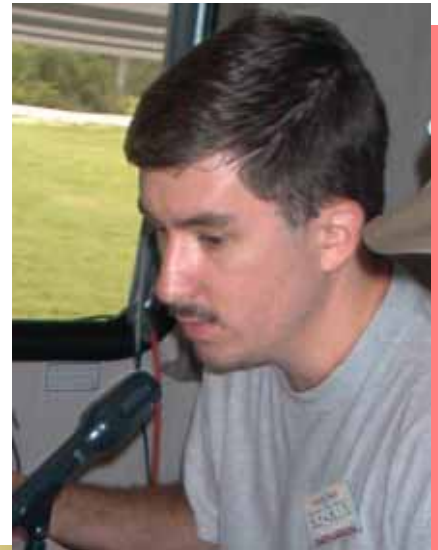
President's Corner

Tim Nicholson KF4RTX

PRESIDENT PRO-TIM?

Finally! No more "acting president" or "president pro-Tim" (I liked that one). I imagine the "acting" may have to continue for a little while until I settle into the position. I want to once again thank everyone for your support.

Also, thanks to Johnny Mayfield WA9SZL for a wonderfully entertaining and informative program on emergency preparedness. As of this writing, Alberto is a tropical storm lurking around the Atlantic. What will it do? Will it come toward us? Will it turn north? Who knows at this point, but it serves as a reminder to stock up on 2-litre bottles and toilet paper.



If anyone is interested, I found another source for the solar radio that Johnny demonstrated.

It is in a catalog from U.S. Cavalry (<http://www.uscav.com>). At least you won't have to play hit-and-miss with Northern.

WA9SZL reaches into his box of tricks for the next item in his arsenal at the August RARS meeting.. Next hurricane, we'll all be staying at Johnny's house!

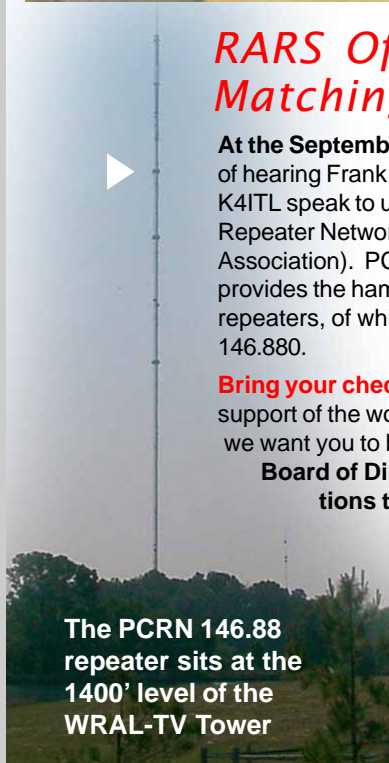


RARS Offers PCRN Matching Donations

At the September meeting, we will have the privilege of hearing Frank Lynch W4FAL and Danny Hampton K4ITL speak to us about PCRN (Piedmont Coastal Repeater Network) and SERA (South Eastern Repeater Association). PCRN is a great organization that provides the ham community with several great repeaters, of which most of us are most familiar with 146.880.

Bring your checkbook! RARS would like to show our support of the work that Danny is doing with PCRN, and we want you to be a part of that support. **The RARS Board of Directors is offering to match donations to PCRN for up to \$500.** Danny and Frank will tell us how we can join PCRN at the meeting. \$15 per year is a small amount to pay to help this great organization. So let's show these guys how much we appreciate the work they do in providing a great network of repeaters!

The PCRN 146.88 repeater sits at the 1400' level of the WRAL-TV Tower





Mike Murphy WA4BPJ shows off a wirewound resistor, and other components, as part of his *Circuits and Components* chapter. Other instructors were Jeff Wittich AC4ZO, Gary Ferdinand W2CS, and Gary Pearce KN4AQ. See more information on RARS classes on the RARS web site.

Just missed the class? The TEARA club will teach a fall class beginning September 11. See the RARS class web page (www.rars.org/class), or e-mail Frank Lynch W4FAL (w4fal@sera.org).

ON THE COVER: class members concentrate as they answer questions on the quiz that followed each class.

20 New Hams Graduate from RARS Summer Class

Another great class!! 20 students passed license tests (so far) as a result of the summer RARS Tech license class. 13 of them passed early, at the VE session held at the August club meeting, and received their callsigns before the end of class (the KG4IY's)! One student passed his test after the *first* class (boy, are we good teachers). Six more passed at the VE session held at the end of the class, including one who went all the way to General. Among those passing were several kids, both teens and pre-teens. Please help welcome them as they show up on the air. Congratulations! ■

Election Results

Yes, it was another clean sweep for the Nominating Committee candidates. Elected at the August RARS meeting were:

President: Tim Nicholson, KF4RTX

Tim will be vacating the office of Vice President with less than 6 months to go, and with most of the VP duties completed for the rest of the year. We will leave that office open until the regular election in November.

RARSfest Chairman: Hank Montgomery, K4HM

Hank will be eligible for a seat on the Board of Directors after he completes one year of membership in RARS.

Public Service Director: Bill Cole KG4CXY

We thank these folks for their willingness to serve and thanks to all who provided input to the committee. ■

PUBLIC SERVICE CALENDAR

For details visit www.rars.org/public-service

MS-150 Bike Tour



September 16-17. Hams provide logistics and safety communications as around 800 cyclists ride from Clayton to the beach at Emerald Isle, with an overnight stop in Kinston.

To volunteer, contact Gary Pearce KN4AQ (kn4aq@arrl.net), or stop by the MS-150 communications web site:

www.rars.org/ms-150

Leukemia-Lymphoma Society Walk

September 21. This event will start/finish at the new State Historical Museums downtown, and all participants will get free admission. Karl Ulrich K4LNX is coordinating this event. To volunteer, contact Karl at k4lnx@arrl.net.

State Fair/Red Cross Communicators



Friday, Oct. 13 through Sunday, Oct. 22.

Hams do the dispatching for the First Aid teams that respond to medical emergencies anywhere on the fair grounds.

To volunteer, contact Bill Cole KG4CXY at 469-0785, or e-mail bcole@jmpstart.com

Diabetes Walk for Hope



Saturday, October 14. The walk starts in Umstead Park, and ends at Lake Crabtree park. To volunteer, contact Dick Orander KD4ISC at 469-5322, or e-mail kd4isc@arrl.net.

Raleigh Marathon



Sunday, December 3. To volunteer, contact Ralph Embry KF4NIR at kf4nir@aol.com.



A Step-by-Step Guide to ULS and CORES

Timothy Nicholson KF4RTX

On September 17, 1998, the FCC decided to implement a system that would simplify and speed up processing of wireless licensing by eliminating the need for processing paper applications. The system they developed was a web browser-based system that allowed for ease of use and security. This system is known as the **Universal Licensing System, or ULS**. A few weeks ago, the FCC announced the successor to the ULS, known as **CORES**, which stands for **COmission REgistration System**. How do the two compare and how do you use them? We'll examine both of them in the next two *Exciter* issues. We'll start with the ULS this month.



Currently, the browser requirement for accessing the ULS is Netscape for Windows version 4.51, 4.61, or 4.7, though they're promising compatibility with Macintosh and Internet Explorer in the future. At one time, the FCC required a direct dial-in to their servers in order to securely access the database, but as of May of this year, they have resolved all security issues and you can now access the ULS from the Internet. The bulk (if not the entire) ULS site is written in Java, for those of us who like to know these things.

To use the ULS, you first have to register. This entails entering your personal information (name, address, etc.) as well as your TIN and a password. The TIN is nothing more than your social security number. To start the registration process, go to the web site

<http://wtbwww05.fcc.gov>

and click on the **TIN/Call Sign Registration** button on the left side of the browser. You will be asked if you are registering for the first time or if you want to modify your registration information.



If you are not registered with the Universal Licensing System:	
<input checked="" type="radio"/> Register Now	
If you are already registered with the Universal Licensing System:	
<input type="radio"/> Update Registration Information	
<input type="radio"/> Update Call Sign/ASR Information	

Select the Register Now button to begin the process. You will then be asked if you are a business or an individual.

Are you registering with the Universal Licensing System as:	
<input type="radio"/> A business entity (e.g., corporation, partnership, government entity, etc.)?	
<input checked="" type="radio"/> An individual?	

Since Hams are not business, select Individual. You will then be shown a screen asking for all your personal information. It's all pretty much self-explanatory. Entry of the TIN and phone numbers should be done without the hyphens. When you're finished, click on the "Submit" button at the bottom of the page.

Please review the NOTICE TO INDIVIDUALS before submitting this application.

Notice to Individuals	Submit	Reset	Help
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If you make a mess and want to clear all the fields, click on the "Reset" button. Help is also available through the "Help" button. The "Notice to Individuals" is a legal form that specifies the need and use of the information required as well as an estimate of time to fill out all the information.

After completing the personal information section, the next step is to enter your callsign. The following screen will have a button "Enter Call Signs". Selecting this will give you a page where you can enter up to 100 callsigns that are registered in your name. Fortunately, we can only have one as an individual, so you just have to enter the one. Click "Submit" once you have entered your callsign.

Finally, you will be shown a confirmation screen with your TIN, password, and Personal Identifier. It is recommended that you print this screen and file it away for safekeeping. That's it! You're registered.

To modify your license information, simply click on the Online Filing button from the main ULS page. This will allow you to make address changes and apply for vanity calls. After clicking on the Online Filing, you will be asked for your TIN and password (skip the SGIN field).



Click "Continue" when you have entered your TIN and password.

Taxpayer Identification Number (TIN):	<input type="text"/>
SGIN:	<input type="text"/>
Password:	<input type="password"/>

Next, you will be asked to select the purpose of the application. There are several options, as shown in this list.

Most of the time, you should select **Modification**. If you have questions about which one to choose, click the '?' button and scroll down the subsequent window to this area:

Application Purposes

[Administrative Update](#)
[Amendment](#)
[Assignment of Authorization](#)
[Cancellation of License](#)
[Duplicate License](#)
[Request for Extension of Time](#)
[Modification \(Market-Based Services\)](#)
[Modification \(Site-Based Services\)](#)
[New \(Market-Based Services\)](#)
[New \(Site-Based Services\)](#)
[Required Notification](#)
[Renewal/Modification](#)
[Renewal Only](#)
[Transfer of Control](#)
[Withdrawal of Application](#)

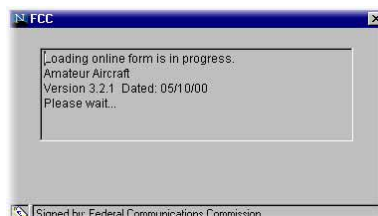
Purpose of Application:	
<input type="button" value="Login"/>	<input type="button" value="Register/Submit"/>
<ul style="list-style-type: none">Assignment of AuthorizationAmendmentAdministrative UpdateCancellation of LicenseDuplicate LicenseRequest for Extension of TimeModificationNewRequired NotificationRenewal/ModificationRenewal OnlyTransfer of ControlWithdrawal of Application	

This will give you a detailed explanation of each selection in the list. Choose the one that best suits your need and click "Continue".

Next, select your callsign and click "Continue".

Call Sign:	<input type="text" value="KF4RTX"/>
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The Java program will begin to load, and the following window will appear:



I don't quite know why they list me as Amateur Aircraft.

The next page that loads has four pages where all your license information is stored.

Application Information | Applicant | General Certification Statements | Amateur Data

All of your individual information will appear under these four "tabs"

continued on next page

Uls continued from previous page

At the bottom of the form, the "Login" button will take you back to the point of entering your TIN and password. The ? provides help. **Previous Screen** and **Next Screen** buttons allow you to navigate sequentially through the pages. The **Notice to Individuals** button is the same as the one mentioned earlier. *The **Submit** sends your changes to the FCC computers for processing; so don't select it until all changes have been made.*

[?](#)
[Login](#)
[Print Preview](#)
[Attachment](#)
[Click 'Next Page' to activate 'Print Preview' and 'Attachment'.](#)
[Previous Page](#)
[Next Page](#)

Please review the [NOTICE TO INDIVIDUALS](#) before submitting this application

[Notice to Individuals](#)
[Submit](#)

The first page, **Applicant Information**, has two questions that must be answered (#7 and #8) before proceeding to the other pages.

Application information	Applicant	General Certification Statements	Amateur Data
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FCC 605 **Quick-Form Application for Authorization in the Ship, Aircraft, Amateur, Restricted and Commercial Operator, and the General Mobile Radio Services** **Approved by CMB**
3050 - 0850

2) Application Purpose 1) Radio Service Code: 4) Fee Number: 3) Call Sign:

☒ This request is for a STA (Special Temporary Authorization) enter "S" and attach the request exhibit as described in the instructions. Otherwise enter "N" (Not Applicable)

☐ This request is for a New, Amendment, Renewal Only, or Renewal/Modification, enter the requested authorization expiration date, MM/DD (this item is optional):

☐ Does this filing request a Waiver of the Commission's Rules? ☐ Yes ☒ No

☐ If "Y", attach the required showing as described in the instructions.

☐ Are attachments (other than associated schedules) being filed with this application? ☐ Yes ☒ No

Fee Status

☐ Is the Applicant exempt from FCC application fees? ☐ Yes ☒ No

☐ Is the Applicant exempt from FCC regulatory fees? ☐ Yes ☒ No

Request Date (MM/DDYY)

The **Applicant** Tab has your basic contact information, such as name and address. Here, you can make changes to this information quickly and easily.

Application Information	Applicant	General Certification Statements	Amateur Data
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Applicant Information

TIN: SGIN: 000 The Licensee is a(n): Individual

First Name: TIMOTHY MI: 0 Last Name: NICHOLSON Suffix:

Entity Name:

Attention To:

P.O. Box: Address: 4817 LOGANSHIRE LN

City: RALEIGH State: NC Zip: 27616

Phone No.: (919)501-7746 FAX: E-Mail: k4rb@arrl.net

The **General Certification Statements** act as a signature page. You will find entry fields for your name and title (if applicable) toward the bottom of this form. Type in your name in order to make the filing official.

Application Information	Applicant	General Certification Statements	Amateur Data
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Certification Statements

The applicant hereby certifies that the use of any electronic equipment or the statements made herein are in accordance with the rules of the International Amateur Radio Union (IARU) and the International Telecommunication Union (ITU) and the Federal Communications Commission (FCC) and the National Telecommunications and Information Administration (NTIA).

The applicant certifies that the information provided herein is true and correct and that the applicant is not providing false information.

Neither the Applicant nor the Applicant's representative shall be held responsible for any false information provided herein.

The applicant certifies that the information provided herein is true and correct and that the applicant is not providing false information.

5301 of the Antenna Code, Section 1.2002

Party Authorized to Sign for the Applicant:

First Name: MI: Last Name:

Title:

Signature:

WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ANY ATTACHMENTS ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, Section 1001) AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

Finally, the Amateur Data Screen allows you to request a callsign change. You can request a systematic change or request a vanity call. Answer question D1 "Yes" if you wish to have a new call assigned systematically, or "No" if you are not changing your call or wish to obtain a vanity call.

Application Information
Applicant
General Certification Statements
Amateur Data

Systematic Call Sign Change
D.1) Is this a request to change a station call sign systematically?
☐
☐

Verify Call Sign Change
D.2) I hereby apply for a verify call sign under the following eligibility: (choose an "X" in the appropriate box and enter the required information):

☐ FORMER PRIMARY STATION HOLDER: I request call sign be shown on my primary station license.
This call sign was previously shown on my primary station license.

☐ CLOSE RELATIVE OF FORMER HOLDER: I request call sign be shown on my primary station license.
This call sign was previously shown on the primary station license of the deceased spouse, child, grandchild, stepchild, parent, grandparent, stepgrandparent, brother, sister, stepbrother, stepsister, aunt, uncle, niece, nephew, or cousin. Enter the deceased relationship to you:

☐ FORMER CLUB STATION HOLDER: I request call sign be shown on the license for the club station.
This call sign was previously shown on the license for this club station.

☐ CLUB STATION WITH CONSENT OF CLOSE RELATIVE OF FORMER HOLDER: I request call sign
be shown on the license for the club station, for which I am the license holder. This call sign was previously shown on the primary station license of a person now deceased. I am doing so with written consent of the deceased person's spouse, child, grandchild, stepchild, parent, grandparent, stepgrandparent, brother, sister, stepbrother, stepsister, aunt, uncle, niece, nephew, or cousin. Enter the deceased relationship to the person giving consent:

☐ PRIMARY STATION PREFERENCE LIST: I request the first assignable call sign from my preference list in Item #2 be shown on the license for my primary station.

☐ CLUB STATION PREFERENCE LIST: I request the first assignable call sign from my preference list in Item #2 be shown on the license for the club station. Enter club ID and the license holder:

For vanity calls, select the method for changing your callsign, then choose up to 25 preferences for a call. They should be listed in priority order.

Vanity Call Sign PREFERENCE LIST

D3) Select your preference list of vanity call signs very carefully. Give exact prefix, numeral, and suffix for each.

1. <input type="text"/>	6. <input type="text"/>	11. <input type="text"/>	16. <input type="text"/>
2. <input type="text"/>	7. <input type="text"/>	12. <input type="text"/>	17. <input type="text"/>
3. <input type="text"/>	8. <input type="text"/>	13. <input type="text"/>	18. <input type="text"/>
4. <input type="text"/>	9. <input type="text"/>	14. <input type="text"/>	19. <input type="text"/>
5. <input type="text"/>	10. <input type="text"/>	15. <input type="text"/>	20. <input type="text"/>

All that's left is to submit the changes. To do that, simply click on the "Submit" button. The subsequent screen will inform you of any processing fees (vanity call fees, for example) and how to pay them.

Federal Communications Commission

ULS Online Filing

Application Confirmation

Application has been submitted. The file number for this application is:

Return
ULS Home
Print Preview
Y

Login

File Number	Payment Type Code	Quantity	Subtotal
No application or regulatory fees are required			

Before leaving this page, you must click and print the 100 Form to attach to your payment to ensure proper fee allocation and to avoid possible denial of this application.

If you have fees due for this filing, mail all Federal FCC Fees 100 along with payment for the amount denoted in Form 100 Box 2 to:

Federal Communications Commission
 P. O. Box 358694
 Pittsburgh, PA 15251-9994

The Fee 100 and accompanying fee must be received by the Commission within 90 days of filing the application. If you believe the calculated fee is incorrect, contact the Technical Support Staff at (202) 414-1200 for assistance.

Form 100
Fees Help

*Check Into the RARS 8:00 Net
Every Evening
on the 146.64 Repeater*

My First Fox Hunt

(in a long time)

Gary Pearce KN4AQ

I got a chance to participate in one of the new fox hunts in the area back in May, and I had a blast. I know I've been pushing Fox Hunting in the *Exciter* pretty hard, but with good reason. It's a huge amount of fun. I figure we can drag some more people kicking and screaming into it, and they'll love it, too.

This hunt combined a driving hunt that began at the Cary Village Mall parking lot, with three on-foot hunts staged at the finish line. I arrived a little late for the 11:00 start, but Charles NZØI and Fred N4IXL waited for me. Bruce KC4UQN had already departed to hunt the fox. My late start didn't matter, as we weren't racing to the finish. The winner was determined by a combination of elapsed time and mileage.

My equipment setup began with a scanner receiver that had a good S-Meter. The receiver was perched on my dashboard and connected through a step-attenuator into a whip. This wasn't designed to be directional, and I couldn't take bearings with it. It was just there to give me signal strength readings as I was driving. Once the signal got strong enough to peg the S-meter, I could knock it down with the attenuator. I fashioned a little "tent" from white paper to keep the receiver from baking in the sun on the dash, and it worked very well.

To take bearings, I borrowed a "tape measure beam" from Fred N4IXL. Fred was "the fox" for this hunt, so he wasn't hunting. He could be at the starting line because he was able to trigger the "fox" transmitter by remote control. I also borrowed Fred's **offset attenuator**, a device I had not played with before. I described them in the June *Exciter* – a little box that lets you reduce the fox signal to measurable strength on an S-meter, even when the fox signal is very strong.

The "fox" was on the air, on 146.565 MHz, with an automatic transmit timer and a circuit that made a bunch of tones, followed by Fred's callsign in mcw. I took my first bearing from the parking lot. I just stood outside the car, with the beam connected to my HT through the offset attenuator, held the beam up over my head and rotated. The signal was fairly weak, and peaked generally northwest. The map pictured above shows the bearings I scribbled as I hunted. The fox signal came on the air for 30 seconds at a time every few minutes.

Instead of heading directly toward the fox, I decided to head southwest, at a 45° angle to my bearing, and get a cross-fix. Heading south on the Maynard Loop in Cary took me where I wanted to go, and the signal got weaker as I drove. I stopped again at Maynard and Kildare Farm, and found some shade from

the hot sun in the K-Mart parking lot. I took my second bearing, and it looked to be about straight north, maybe a little northeast. As you can see on the map, the lines intersected in downtown Cary. The **X** on the map shows where the fox really was.

Now I aimed directly toward the fox. I headed north on Kildare Farm Road, and stopped about where the bearing lines intersected. The fox signal had gotten stronger, but it still wasn't pinning the S-meter, so I figured I wasn't in the immediate vicinity. I took the third bearing with the beam. The first two bearings I had taken, back at the start and down by Maynard

Road, seemed fairly definite. I got one significant peak in the signal, though with a three-element beam the peak was fairly broad. You can get a much more precise bearing using the sharp null off the back of the beam, but at those spots the signal was too weak for me to use a null.

But here at "bearing three", the beam gave me a bunch of peaks and nulls, and none seemed to stand out. I walked around the parking lot and made several attempts at getting the bearing before I was satisfied that I should keep heading north.

I drove farther north on Harrison to Maynard again (this time at the north end of that road, which makes a complete loop around Cary).

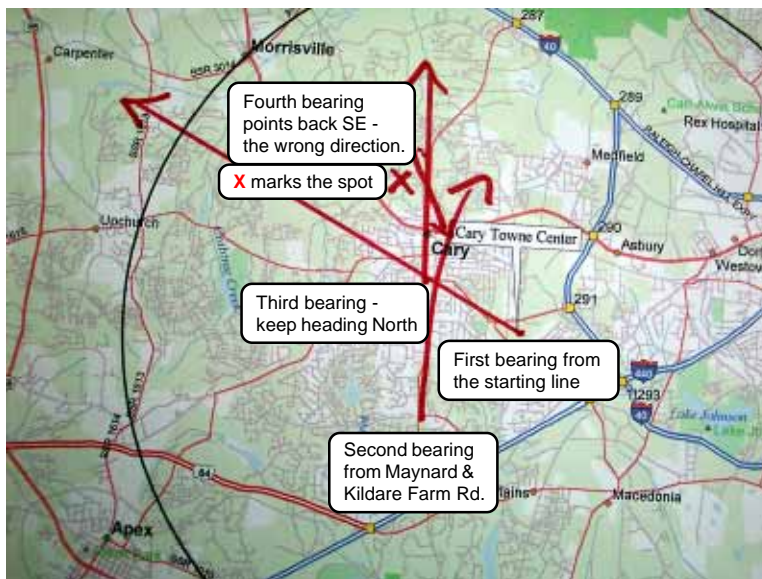
The signal was getting stronger, but I expected an even stronger signal if I was really getting close, so I stopped and took the fourth bearing at Harrison and Maynard.

This is where things went wacky. As you'll see from the map, I was now only a half-mile east of the fox. But the beam readings were even more "watery" than before. It was really hard to get a consistent peak in one direction. Best I could tell, I needed to go back south. Maybe a little to the east. But since I had just come from the south and I hadn't seen a really strong signal, I knew that straight south wasn't quite right. I decided to take the Maynard Loop to the east and circle the area that the beam seemed to be leading me to.

You know already that I was now headed in the wrong direction, and the S-meter confirmed that. The signal began to drop immediately. When I reached Chapel Hill Road, I turned back west, and the signal picked up as I approached Harrison.

Here, I used deduction more than direction finding. I'd been north, south and east, and hadn't found a really strong signal. So I continued heading west on Chapel Hill Road. I stopped one more time in a school parking lot a few blocks west of Harrison and took another bearing (not shown on the map, but it would be just southeast of the **X**). This was the first time I needed to crank in any attenuation to keep the meter off the peg. But once again, I couldn't get a useful reading. Peaks to the southeast, to the northwest... I kept moving round the parking lot until I found a place where I could rotate the beam and get one consistent signal, to the northwest.

continued on next page



This is the actual map I plotted my bearings on. Bearings One, Two and Three aren't too bad. Bearing Four was probably a bounce off of a nearby water tower. It pointed me southeast, when I needed to go west.



I took Chapel Hill Road bit farther west, and turned north on the Maynard Loop again. The signal was finally getting satisfyingly strong – I knew I was

getting close. I was less than ¼ mile away from the finish line before I finally had to add attenuation on my scanner receiver.

There was a school and a park across from each other on Maynard. Without taking a bearing, I chose the park, and as I pulled in the parking lot, I saw Fred and Charles, and another ham who had not registered at the beginning of the hunt, but rather had started from Garner and driven straight to the fox's hideout. That ham, who asked to remain anonymous, was using a fancy Doppler unit that continuously pointed out the way. He beat Fred back to the fox!

I pulled into a shady spot. I hadn't found the fox yet, just the right parking lot. The lot was adjacent to a woods, and on the other side of the lot there were some tennis courts. Using the offset attenuator and beam, I determined that the fox was in the direction of the woods. I moved left and right a hundred feet or so, and got readings that pointed more or less back toward my car. Fred was really enjoying the spectacle. The woods were pretty thick at this spot, nothing I wanted to trudge through. I

thought the fox must be right at the edge, or only a few feet in, but I searched all around and couldn't find anything. I went looking for a path to get a little deeper, and Fred, who was probably getting impatient, gave me a clue. He told me I was looking for a vertical antenna.

That clue led me to a black piece of wire – a half-wave vertical – stealthily draped in a tree and connected to an HT and battery that were hidden in a pile of leaves... all about three feet from the nose of my car! The pictures you see here indicate my appreciation for Fred's clever invention.

Now I had found the first fox, but there were three more to hunt on foot, somewhere in the park. These three foxes were on another frequency (146.50), and took turns transmitting for 30 seconds. I found #1 in about 30 minutes, more or less directly following bearings from the parking lot. It was in plain sight, in a protective bag lying on a log. But, there were two of those bags side-by-side. I had to pick the right one.

I tuned my HT to the 3rd harmonic, 439.5 MHz, and removed the antenna. I got a weak signal while holding the HT next to one bag, and no signal from the other.

Fox identified.

Can you see the fox's antenna in my left hand? Neither could I. It was hanging about three feet from the nose of my car when I pulled into the parking space. The beam kept pointing right at it, and I didn't believe it. I was so impressed with Fred N4IXL's camouflage job that I just had to express my appreciation. NOW can you see the antenna?

*continued on
next page*





Bruce KC4UQN, and Charles NZØI. Charles is holding a "Tape Measure Beam." The elements are made from an actual measuring tape spool. The flexible elements make it easy to stow the beam in the back seat quickly, without worrying about bending elements or poking holes in the car seat.

Why the inconsistent, watery readings? The bane of direction-finding is **multipath reflections**. You (should have) learned about them when you took your Tech license test. At VHF/UHF, signals bounce off all kinds of things, so from any one receiving spot, the signal you're listening to appears to come from several sources. And the direct signal isn't always the strongest! The reflected signals travel a longer path to reach the receive antenna, and so they are **phase shifted**. Depending on how much shift there is, they may add to or subtract from the received strength of direct signal. This is what causes the mobile flutter or "picket fencing" you hear while driving, and why you might have to stand in *just the right spot* with your HT to hit a distant repeater. This is also what causes ghosts on your TV when you use a rabbit-ear antenna.

At the 2-meter wavelength, just a few inches can make a pretty big difference in signal strength as you move around through various reflections. I suspect that as I waved the beam around, I was moving through multipath peaks and valleys, so I saw those signal changes as well as the directional effects of the beam. A bigger beam with more directivity would have reduced the effects of the multipath by attenuating the signals that bounced in from the sides of the beam. Those signals would still appear as peaks when the beam is pointed at them, but the direct signal would usually be stronger. But a bigger beam would be harder to stow in the back seat of the car.

To combat multipath, you might have to take several DF readings, and move around while you do it, "averaging" the results in your head. It is probably easier to get accurate DF readings from a moving vehicle than from a stationary position, although you'd need to mount the beam in the center of the roof to keep the car's ground plane even. A convertible or a car with a big sun-roof opening might be the best fox-hunt vehicles. Watch out for low-hanging branches!

My First Hunt continued from previous page

The signal from fox #2 was being more elusive. I already knew that I was getting inconsistent beam headings from fox #2, since I was df-ing all the foxes while I was hunting for fox #1. So I headed for fox #3 instead, and found it in another 30 minutes. Fred promised he had placed the foxes only about 20 feet from a path in the woods, and except for that first stealth-antenna fox he had not disguised them, so they weren't that hard to find. But there were no "A-Ha!" moments when I aimed my gaze directly along the boom of the beam and spotted a transmitter. The beam headings were all broad and somewhat ambiguous. The nulls off the back of the beam were much sharper, but there were usually more than one, and it was hard to tell which was the really deep one right off the back.

Having found foxes 1 and 3, it was time to concentrate on fox #2. It seemed to be coming from everywhere, at least according to the beam. The signal strength was higher around the tennis courts, and I figured that the chain-link fence was probably reflecting the signal. I searched the perimeter, saw nothing, and more importantly, didn't get that superstrong signal meaning I was feet away from the fox.

Was the fox some distance away, and just being reflected along the fence? It got weaker whenever I walked away from the fence. Finally (Duh!) I walked *into* the tennis courts. The signal jumped up. I looked around for a bag hanging on the fence, but there wasn't much in there except three plastic garbage cans hanging from the posts of the tennis nets. Duh! again. I walked up to the center can, and inside was the fox.

What a great day!

continued on next page

Fox #2 was hidden in the trash can in the middle of this tennis court. The fence surrounding the court did a great job of scattering the signal - it seemed to come from everywhere.



Fox Hunts Scheduled for Fall

Charles Scharlau NZØI

The next firm hunt date is **September 10, at Umstead State Park, start time 1:00 PM (approximate)**. The location within the park has not yet been decided. It will be another on-foot style hunt, with five transmitters to find. All transmitters will be located just off of tick-free trails. (Charles a.k.a. "Mr. Tick Magnet" will personally sweep the trails of ticks when he places the transmitters!) Orange-and-white orienteering flags will mark the (approximate) locations of the hidden transmitters.

It appears likely that another drive-to style hunt will take place later that month. Details of that hunt have not been announced.

Looking further down the calendar, there are on-foot hunts planned for October 29 (Schenck Forest), November 19 (Lake Johnson), and December 10 (Umstead State Park). The approximate start time for all on-foot hunts is 1 PM.

As always, stayed tuned to www.qsl.net/nz0i/ for all the latest details.

You'll see it there, and on the PiedmontTrackers mailing list.

My First Hunt continued from previous page

Fox hunting will bring out the best and worst in you! If you have a partner (especially if the partner is a spouse) the frustration of ambiguous bearings can test the mettle of your relationship. In a drive-to hunt, it seems like all the traffic lights and other cars on the road are there specifically to slow you down and keep you from reaching your goal. Unless you've gone too far, that is. Then traffic whisks you along for miles before you can stop and turn around. But remember – Safety First! ■

THE FOX. NZØI's fox transmitters are made from low power HTs, with a timer, control and ID circuitry. They can be hidden in the woods, and preset to turn on when the hunt begins. Then they cycle on and off with precise timing. Several fox transmitters can share a frequency, with each transmitting for 30 seconds or so. This isn't the only way to do it. The Fox can be operated manually, and the human operator can be disguised. There are many legendary stories of ingenious ways Foxes have been hidden - and found.



2-Meter SSB Net Attracting Record Check-Ins

John Aceti N1GMV

Word must have got out about the 2 meter SSB Net! Recently, without any special band opening, we experienced a record turnout on the net.

We had check-ins as far west as Bristol, TN (EM86) North up to West Virginia (EM99) South down to Lumberton and Fayetteville (FM04). Along with a whole new crowd in Raleigh! We had some new check ins from points south and our first YL check in from Fayetteville running only an HO loop, way to go Bonnie!

For those of you not familiar with 2 meter SSB, I don't want you to think that you will get this type of distance with you standard J-Pole antenna on a push-up-pole! It does require some advance antenna arrangement and **LOTS OF HEIGHT** in order to achieve 250-500 mile communication on a regular basis. It is rewarding however for those who can understand and appreciate the differences in propagation for this band.

We had an awesome Auroral opening on 2 meters last month that had us all dusting off the CW key! It was my first real experience with working Aurora and was a lot of fun. Kind of nice to have a "Pile Up" coming back to you after calling CQ for a change!

If you have 2 meter SSB capability I would like to invite you to join in on the action **Sunday evenings at 8:30 PM on 144.220 MHz USB.**

If you do not have 2 meter SSB please listen in anyway by visiting <http://www.qsl.net/n1gm/> and look for the link on the right saying **Click on this link during Net Time!**

For those of you that may have missed it you can hear an archive of the net from this url:

<http://www.qsl.net/n1gm/thenet.ram>

You will of course need Real Player G2 in order to stream the audio content.

73 de John N1GMV
wishing he had a bigger tower!!!

K1MW, N4TAB Demo Emergency Equipment at Field Day

Wondering what that strange 35 foot yellow mast downhill from the Field Day 20 meter CW tent was? No, it wasn't the world's largest spaghetti noodle.

It was part of a Solar Power and Rapid Emergency Deployment demonstration by club members Mike Wood K1MW and Tom Brown N4TAB.

Tom and Mike own a company that manufactures the **SunBank** portable solar power system, the **QuickMast** portable telescoping antenna mast and a miniature portable 45 watt repeater with built-in duplexer for government and public safety agencies. The equipment works great for Field Day too.

Tom is a newly licensed ham. He walked into the Durham Hamfest exam session on May 27 with no amateur license, and walked out with an Extra Class ticket!

When Tom's license was granted on June 22 Mike suggested he visit the RARS Field Day that weekend to see the various stations in operation. Tom was so impressed by the first class Field Day operation and the friendly RARS folks that he joined RARS as the 300th member right after Field Day. He's already looking forward to next year's Field Day. ■



Tom N4TAB (left), and Mike K1MW (seated), demonstrate a ham's dream Field Day setup. But wait! Where's the Solar Powered Air Conditioner?

RARS Returns 53.25, 444.95 to SERA Coordination Pool

The RARS Board of Directors voted at its August meeting to return the 53.25 and 444.95 repeater frequencies to SERA for recoordination. SERA's North Carolina Frequency Coordinator Frank Lynch W4FAL informally reminded RARS officers that both repeaters had been off the air for years, well beyond the SERA guidelines for recoordination.

One year ago, Frank had requested that RARS relinquish the coordination for those frequencies. We asked for more time, and he agreed to wait. Since then, there had been some progress on 444.95 - a repeater has been on the air sporadically from N4QVT's home, but it has never worked well. With FM/Repeater Chairman Fred Decker N4IXL out in Hollywood making movies, there has been no one to repair it and find it a permanent site. And although some equipment has been gathered for a new 53.25 repeater, no work has been done to make it operable.

Frank assured us that if we do get repeaters ready for 50 and 440 MHz, there will be frequencies available for coordination. The two we were holding, though, were urgently needed elsewhere. 53.25 was needed in areas with television channel 2. Since it is relatively low in the band, there's less potential for interference from the strong TV signal, and a little less problem with TVI. 444.95 was needed in Virginia, because that area sits on the border of the "northeast corridor" where some UHF repeaters operate with inverted input and output frequencies. That means they can't use the ".25" and ".75" channels. ■

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Club Meeting Minutes

August, 2000

The regular meeting of the Raleigh Amateur Radio Society was held on August 1, 2000 at the Forest Hills Baptist Church on Clark Avenue.

The meeting was called to order at 7:30p by Vice President Tim Nicholson, KF4RTX, who welcomed 56 members and 6 guests. An additional 32 people were in the exam session.

David, N4YTO gave the Treasurer's report. He said that the membership stands at 226.

A Special Election was held for the Office of President, and the positions of Public Service Chairman and Hamfest Chairman. The nominee for President was Tim Nicholson, KF4RTX. The Public Service nominee was Bill Cole, KG4CXY, and Hamfest Chairman was Hank Montgomery, K4HM. AC4ZO opened the floor for nominations. On motion by N4YTO, seconded by KA4NSA, the nominations were closed. The slate of nominees were then elected by vote of the members present.

KN4AQ said a few words about what has been going on in ARES. He announced a work day at the State EOC scheduled for Saturday, at 7:00a for antenna work on the roof of the building. Also, training is planned for August 9, and August 12.

KF4RTX announced a special round of door prizes which were provided by Murray Gavin. They were four Astron power supplies, to be given away along with the regular prizes

AC4ZO gave the Field Day report. The official results will be available in November.

Gary, KN4AQ announced that a few of our class students are in the test session going on at the time of this meeting. Also, a test session is scheduled for Thursday August 17, at the end of the class. Gary then asked for volunteers for Tune-In-The-World night, scheduled for Monday August 14.

Bill, KG4CXY then took the podium to mention a few public service opportunities that are coming up. His message was that he needs numerous volunteers for several events. The events are spread out between now and the end of the year, and details are available on the RARS web page. A discussion of sorts then took place concerning promoting ham radio at these events and other related topics.

With this completing the announcements, Tim introduced the program for the evening at 8:20p. The program was presented by John Mayfield, WA9SZL. The topic was Emergence Preparedness.

Door prizes went to AB4OZ, KO4QH, KE4TMP, NW4Z, N4HAF, W5PGX, KE4TMP, and K4DAM. The meeting adjourned at 9:07p.

Jeff Wittich, AC4ZO Secretary

Board Meeting Minutes July, 2000

The monthly Board meeting of the Raleigh Amateur Radio Society was held at the Forest Hills Baptist Church on July 18. The meeting was called to order by Vice President Tim Nicholson KF4RTX at 7:34p. Members present at that time were: KN4AQ, KG4CXR, K4HF, AB4OZ, KF4RDP, KF4RTX, N4YRD, N4YTO, and AC4ZO. The total attendance was 10.

On motion by N4YTO, seconded by K4HF, the minutes of the June meeting were approved.

N4YTO gave the Treasurer's report. Membership stands at 303 with 211 renewed.

In the Vice President's report, KF4RTX Tim said that the program for the August meeting will be Emergency Preparedness with John, WA9SZL. September will feature Frank W4FAL and Danny K4ITL with a program on SERA and PCRN. Matt, W2BYV will present APRS in October.

Committee Reports:

KN4AQ reported on the **Education** Department. He said the class is nearly overwhelming, and that the unusual summer class promises to be a great success. Most students report learning of the class by word of mouth, but all media have been effective. One student has already passed his exam.

In the **Exciter** Editor report, KN4AQ reported that the Exciter is at the printer, and is 16 pages this month. This includes a 5 page roster.

KF4RDP gave the **Webmaster's** activity report. He said we are still getting about 200 hits per week on the home page, and about 200 per day cumulative.

KG4CXR reported on **Membership Services**. All is running smoothly in her area.

K4HF announced that we are going ahead with the Special Election at the August meeting with the candidates as reported in the newsletter. This includes KF4RTX for the office of President, and K4HM for Hamfest Chairman, and KG4CXY for Public Service Chairman.

Old Business:

AC4ZO gave an update on the progress of the Articles of Incorporation and Bylaws issue. He said that Fred is waiting for a call from the Secretary of State's office concerning a procedural issue. The item was continued to next month

New Business:

N4YTO has updated the RARS treasury such that checks are now computer printed. He said that the way this affects members is that he will no longer carry a checkbook, and would like members to get a check prior to incurring the expense.

Comments and Announcements:

KN4AQ reported some dates for some ARES activities, including maintenance on antennas, and 2 ARES training sessions.

N4YRD said that our guest speakers for the SERA/PCRN meeting are very excited about their upcoming opportunity to address the Club.

K4HF brought up the issue of making donations to certain charitable ham related organizations in the area. A small amount of discussion took place. A motion was made by K4HF that we approve the expenditure of up to \$500 for charitable contributions on a member matching program basis. The motion was seconded by AB4OZ, and passed.

KF4RTX reports having trouble with his homeowners association concerning a feed line exiting his window. We'll see what happens in the coming months.

With the business complete, on motion by K4HF, the meeting adjourned at 8:45p.

Respectfully submitted, Jeff Wittich, AC4ZO - Secretary

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Hamfest Calendar

Sept. 2-3:	Shelby
Sept. 17:	Butner
Sept. 23-24:	Virginia Beach, VA
Oct. 8:	Maysville
Nov. 4:	Monroe
Nov. 19:	JARSfest (Benson)

courtesy of the
SERA Repeater Journal



Snapshots



Antenna Party: AF4WY (aka KU4RM), WD4MGP, KD4ISE, KG4FIQ, KG4FJA, K4NGJ and KG4HDT pose atop the State Administration Building before erecting new antennas for the EOC station.

ARES Training Draws 50 Hams to State EOC

Two Wake County ARES Meeting/Training sessions brought 50 hams to the State EOC to learn more about participating in emergency and public-service communications. A summary of the meetings will be available on the Wake County ARES web page:
www.wakeares.org.



NS2I describes the communications network at the State EOC



State EOC Activated for Catawba Nuke Test

The State EOC Amateur Radio Station in Raleigh was activated for ARES during a drill for the Catawba Nuclear Plant on July 25. Gary Pearce KN4AQ operated the State EOC station from 7:30 am until about 1:00 pm when the exercise concluded. His main contact was with Section Manager John Covington W4CC in Charlotte, who in turn relayed messages to Daryl Sampton W4OH at the Mecklenberg County EOC via two meters.



KN4AQ Operating the State EOC Station during the Catawba Nuclear Plant Exercise

Also on the air were Geoffrey Russel KU4KM at the NC Emergency Management Western Branch office, and Bob Good K4BG in Rock Hill, across the Catawba River from the plant.

Gary and John began communicating on 3927 kHz following the NC Morning Net, which meets there at 7:30 am. Later, they moved

to 3923 kHz, the Tarheel net frequency, which is monitored throughout the day by stations across the state. As band conditions faded on 75 meters, they considered moving to 40 meters. However, the backup frequency of 7232 kHz was busy. They moved around 40 meters several times looking for a clear frequency before finding one and passing some traffic.

Signals were a little better on 40, but no one would be able to find them there, so they moved back to 3923 kHz. When signals were too weak for them to copy each other, James Chaffin K4CWZ in Robbins stepped in to relay.

Several test messages were sent between EOC personnel, but no traffic was handled that directly related to the drill. This operation continued to point out that the State EOC station is somewhat below par on HF. At least one other Wake County ham reported being able to hear the Charlotte and Western Branch stations readably when the State EOC was unable to copy them. ■

Morse Test To Get Harder

ARRL Letter

The National Conference of Volunteer Examiner Coordinators has voted to set up revised standards for the administration of Morse code examinations in the US. The move at the NCVEC's July 21 meeting in Gettysburg, Pennsylvania, comes in the wake of the FCC's December 30, 1999, action to establish 5 WPM as the sole Amateur Radio Morse code requirement.

Under the revised standards, examinees would have to show 25 character-count solid copy on their test sheets or successfully answer seven out of 10 questions of a fill-in-the-blank quiz on the sent text. The plan would bar the use of multiple choice tests for Morse code testing.

Morse examinations would specify use of the Farnsworth method, where characters are sent faster than the overall speed and additional spaces added between characters, words and sentences. Farnsworth "character speed" would be in the range of 13 to 15 WPM at an audio pitch of between 700 and 1000 Hz. Standard 5 WPM tests with 5 WPM character speed could be administered only as a special accommodation.

The new Morse testing standards are to be in effect by next July 1, but VECs may implement them sooner.

FCC statistics presented during the session show that Technician and Tech Plus licensees still make up nearly one half of the US amateur population, which totals 710,626--including expired licensees within the two-year grace period. As of July 18, there were 209,550 Techs and 121,175 Tech Pluses.

Reflecting the shift in license class because of restructuring, Extras now number 92,165, and Generals 134,015--both up by more than 20% over year-earlier figures. There are 93,834 Advanced ops, and the Novice population remains at just under 60,000. ■